

REMARKS

Claims 1-22 and 29-32 are currently pending in the application. In an Office Action dated August 8, 2003 ("Office Action"), the Examiner rejected claims 1, 2, 4-11, 13, and 18 under 35 U.S.C § 103(a) as being unpatentable over Besemer et al., U.S. Patent Number 5,945,334 ("Besemer"), and objected to claims 3, 12, 15-17, 19-22, and 29-32 as being dependent upon rejected base claims. The Examiner Applicant's representative respectfully traverses these rejections.

Applicant's representative would like to thank the Examiner Handy for his conditional allowance of claims 3, 12, 15-17, 19-22, and 29-32. Applicant's representative would also like to sincerely thank Examiner Handy for a well-reasoned and extremely well-crafted Office Action. It is simply a delight to work with an Examiner who makes a real effort to understand and appreciates the present application and cited art, who clearly lays out his rationale for claim rejections, and who adheres so diligently to a civil and claim-focused presentation of arguments. The Office Action represents a standard to which Applicant's representative will endeavor to attain in this and future correspondence with the USPTO. Applicant's representative may well, in a future response, rewrite claims 3, 12, 15-17, 19-22, and 29-32 in accordance with Examiner Handy's suggestions, but defers doing so in the current response in order that Applicant's representative can again attempt to convince Examiner Handy of the non-obviousness of the currently claimed invention of independent claim 1 .

First, please consider again claim 1, provided below for the Examiner's convenience:

1. A roll pump within an enclosed region comprising:
 - a first solution-collection region;
 - a solution chamber, in communication with the first solution-collection region, in which solution is held within the chamber by capillary action;
 - a second solution-collection region in communication with the solution chamber; and
 - a solution-return surface on which solution moves from the second solution-collection region to the first solution-collection region.

By the language of claim 1, an infringing device would need to have two, distinct communicating solution collection regions, both in communication with a solution chamber,

and a solution-return surface on which solution moves from the second solution-collection region to the first solution-collection region. As claimed, in detail, in subsequent claims, and as described in detail in the specification of the current application, these claimed features provide for the claimed roll pump, because solution migrates from the first solution-collection region into the solution chamber, from the solution chamber into the second solution-collection region, and from the solution-collection region across the solution-return surface to the first solution-collection region as the roll pump rotates about an axis.


There is no equivalent constellation of solution chambers, return surfaces, and solution collection regions in the array holder disclosed in Besemer. For example, the Examiner, in describing Besemer, states "in Figure 6, Besemer shows an embodiment in which a substrate is held over a gap and borders two smaller gaps which hold liquid on each side of the substrate." However, the liquid referred to by the Examiner is, in reality, glue, as stated in Besemer beginning on line 16 of column 8: "In some embodiments, the trough is sufficiently large to receive an adhesive 630 for attaching the chip to the package." In all disclosed variations in Besemer, two ports (e.g. 731 and 741 in Figure 7) on one side of the array holder interface with channels (e.g. 561 and 551 in Figure 5b) on the other side of the array holder to allow solutions to be introduced into, and extracted from, a cavity (e.g. 310 in Figure 6) below the substrate (e.g. 120 in Figure 6). A similar configuration is shown in Figure 31, where ports 3205 and 3207 are used to introduce to, and extract fluid from, channels 3411 and 3413 that lead to the central cavity 3405. Figure 31 is described, in detail, beginning on line 8 of column 9 of Besemer.

In all of the variations shown in Besemer, there is a single solution chamber (310, 3405) and two ports (731 and 741, 3205 and 3207) through which solution is introduced into, and extracted from, the solution chamber. The Examiner suggests that bottom surface of the substrate could serve as the solution-return surface of claim 1. However, the bottom of the substrate, were Besemer's array holder to be inverted, and then re-inverted, would simply return solution to the central cavity. It is, essentially, the top of the cavity. Besemer does not disclose two solution-collection regions in communication with the central cavity. The channels (561 and 551 in Figure 5b and 3411 and 3413 in Figure 31) are simply ramps that direct solution into the cavity from the ports – they do not collect or hold solution.

Thus, in Applicant's representative's opinion, Besemer does not teach or suggest Applicant's claimed first-solution-collection region, second solution-collection region, and solution-return surface. Overwhelming, in Applicant's representative's opinion, proof that Applicant's claimed invention is neither taught nor suggested by Besemer is found in the descriptions of agitation systems depicted in Figures 28 and 29 that begin on lines 30 of column 18 and lines 19 of column 19. In these agitation systems, external containers and external nitrogen-gas sources are employed to move solution from a first external container into the array-holder cavity and then out into a second external container, in order to achieve flow of solution across the substrate surface. In the second embodiment, an elaborate set of valves are used to facilitate this fluid flow. Elsewhere, for example beginning in line 6 of column 7, Besemer states that fluid circulation within the array holder is achieved by extracting fluids from, and introducing fluids into, the central cavity through the ports. Were solutions able to freely flow across the substrate in Besemer's enclosed array holder, none of these elaborate mechanisms, including external solution-collection vessels and external fluid-forcing agents, would be necessary. In other words, Besemer clearly and repeatedly teaches away from Applicant's claimed invention, in which an enclosed constellation of chambers in fluid communication surrounding a substrate provide for internal solution flow across the substrate surface under the influence of gravity when Applicant's roll-pump is rotated. Specifically, Besemer states that, "[i]n a preferred embodiment, the fluid flows against the direction of gravity through the cavity" (line 43, column 10).

Applicant's representative requests that the Examiner again review Besemer in light of Applicant's representative's comments. Besemer does not disclose the elements of independent claims 1, nor of independent claims 10, and 18, for the reasons provided above. Therefore, Applicant's representative feels that all of the claims remaining in the application are now clearly allowable. Favorable consideration and a Notice of Allowance are earnestly solicited.

Respectfully submitted,
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